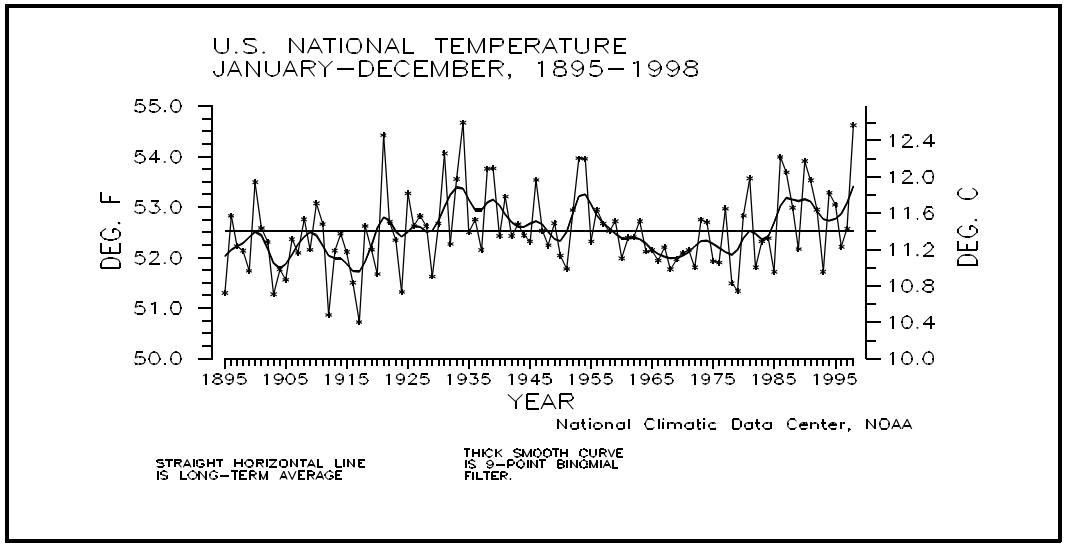
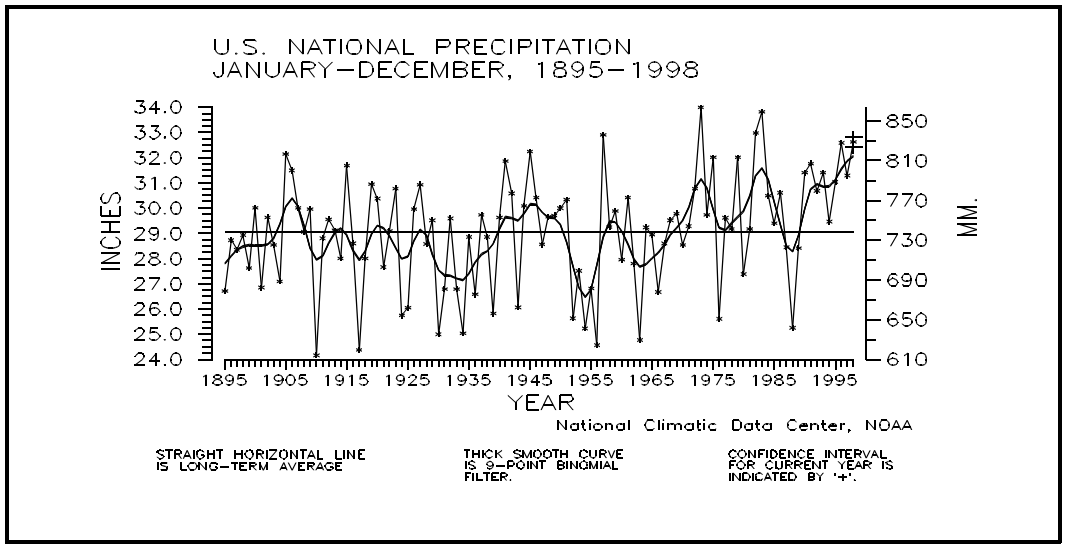
DECEMBER 1998 **HISTORICAL CLIMATOLOGY SERIES 4-7**
Includes Annual Report Volume 10 Number 12

CLIMATE VARIATIONS BULLETIN





noaa NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE / NATIONAL CLIMATIC DATA CENTER ASHEVILLE, N.C.

This CLIMATE VARIATIONS BULLETIN (CVB) is a preliminary report that puts current monthly climate anomalies into historical perspective using climate databases archived at the National Climatic Data Center (NCDC). It is issued on a monthly basis. Supplemental sections are included which address seasonal and annual perspectives, when appropriate.

Current data are based on preliminary reports from River Forecast Center stations and First and Second Order airport stations obtained from the National Weather Service (NWS) Climate Prediction Center. THE CURRENT DATA SHOULD BE USED WITH CAUTION. These preliminary data are useful for estimating how current anomalies compare to the historical record, however the actual values and rankings for the current year will change as the final data arrive at NCDC and are processed.

The following NCDC datasets are used for the historical data: the climate division drought database (TD-9640), and the hurricane datasets (TD-9636 and TD-9697). It should be noted that the climate division drought database consists of monthly data for 344 climate divisions in the contiguous United States. These divisional values are calculated from the 6000+ station Cooperative Observer network.

If you are a climate researcher and would like to order copies of the historical datasets used to make graphs of the type in this report, call 828-271-4994 or fax a letter to 828-271-4876 or mail a letter to the address given below, ATTN: Research User Services.

All other questions or requests for data should be made by calling 828-271-4800 or sending a fax to 828-271-4876 or by writing to:

National Climatic Data Center, NOAA
Federal Building
151 Patton Avenue, Room 120
Asheville, NC 28801-5001

If you use any of the information from this CVB, please identify "National Climatic Data Center, NOAA" as the source.

UNITED STATES DECEMBER AND ANNUAL CLIMATE IN HISTORICAL PERSPECTIVE

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TABLE 1. PRECIPITATION AND TEMPERATURE RANKS, BASED ON THE PERIOD 1895-1998. 1 = DRIEST/COLDEST, 104 = WETTEST/WARMEST FOR DECEMBER 1998, 104 = WETTEST/WARMEST FOR NOV-DEC 1998, 104 = WETTEST/WARMEST FOR JUL-DEC 1998, 104 = WETTEST/WARMEST FOR JAN-DEC 1998.

REGION	DEC 1998	NOV-DEC 1998	JUL-DEC 1998	JAN-DEC 1998
PRECIPITATION:				
NORTHEAST	7	2	3	73
EAST NORTH CENTRAL	16	38	36	79
CENTRAL	47	30	36	90
SOUTHEAST	45	30	31	81
WEST NORTH CENTRAL	62	91	96	96
SOUTH	54	59	92	64
SOUTHWEST	19	22	69	70
NORTHWEST	81	94	78	99
WEST	13	49	55	103
NATIONAL	33	41	61	100
TEMPERATURE:				
NORTHEAST	99	95	98	104
EAST NORTH CENTRAL	91	98	103	103
CENTRAL	88	95	100	103
SOUTHEAST	96	100	103	101
WEST NORTH CENTRAL	73	90	102	100
SOUTH	68	93	102	101
SOUTHWEST	62	79	93	87
NORTHWEST	42	70	103	100
WEST	39	51	76	40
NATIONAL	84	102	104	103

TABLE 2. EXTREMES, 1961-90 NORMALS, AND 1998 VALUES FOR DECEMBER. IT SHOULD BE NOTED THAT THE 1998 VALUES WILL CHANGE WHEN THE FINAL DATA ARE PROCESSED.

PRECIPITATION (INCHES)

REGION	DRIEST VALUE	DRIEST YEAR	WETTEST VALUE	WETTEST YEAR	NORMAL PCPN	1998 PCPN
NORTHEAST	.98	1955	6.74	1973	3.45	1.65
EAST NORTH CENTRAL	.37	1943	2.62	1982	1.44	.76
CENTRAL	.90	1958	7.58	1990	3.44	2.89
SOUTHEAST	1.18	1955	7.05	1953	3.87	3.34
WEST NORTH CENTRAL	.19	1986	1.20	1917	.65	.67
SOUTH	.64	1917	5.51	1911	2.49	2.47
SOUTHWEST	.11	1929	2.29	1965	.96	.46
NORTHWEST	1.17	1976	8.42	1996	4.03	4.99
WEST	.09	1989	7.05	1955	2.33	.99
NATIONAL	1.22	1958	3.60	1982	2.30	1.92*

* PRELIMINARY VALUE, CONFIDENCE INTERVAL + OR - .09 INCHES

TEMPERATURE (DEGREES F)

REGION	COLDEST VALUE	COLDEST YEAR	WARMEST VALUE	WARMEST YEAR	NORMAL TEMP	1998 TEMP
NORTHEAST	13.3	1989	34.5	1923	26.6	32.8
EAST NORTH CENTRAL	6.9	1983	29.0	1923	18.6	25.4
CENTRAL	21.9	1989	42.0	1923	33.0	37.4
SOUTHEAST	39.3	1989	55.9	1931	47.3	52.0
WEST NORTH CENTRAL	4.3	1983	30.0	1939	19.4	23.4
SOUTH	33.6	1983	51.0	1933	43.5	45.3
SOUTHWEST	24.8	1909	39.9	1980	32.6	33.3
NORTHWEST	21.9	1990	37.9	1917	29.4	29.6
WEST	33.0	1990	45.6	1929	38.7	37.9
NATIONAL	25.8	1983	38.4	1939	32.8	35.7*

* PRELIMINARY VALUE, CONFIDENCE INTERVAL + OR - .1 DEG. F.

TABLE 3. EXTREMES, 1961-90 NORMALS, AND 1998 VALUES FOR JANUARY-DECEMBER

PRECIPITATION (INCHES)

REGION	DRIEST VALUE	DRIEST YEAR	WETTEST VALUE	WETTEST YEAR	NORMAL PCPN	1998 PCPN
NORTHEAST	31.77	1930	53.79	1996	41.63	42.54
EAST NORTH CENTRAL	19.81	1910	36.63	1951	30.50	32.08
CENTRAL	30.56	1930	53.38	1990	43.05	47.74
SOUTHEAST	37.56	1954	62.39	1929	51.03	54.48
WEST NORTH CENTRAL	11.49	1934	22.86	1915	16.92	19.90
SOUTH	23.40	1917	46.91	1973	35.72	36.87
SOUTHWEST	7.68	1956	22.10	1941	13.64	14.31
NORTHWEST	19.00	1929	37.30	1996	27.50	32.81
WEST	9.97	1947	31.47	1983	16.51	26.84
NATIONAL	24.17	1910	33.99	1973	29.46	32.61*

* PRELIMINARY VALUE, CONFIDENCE INTERVAL + OR - .19 INCHES

TEMPERATURE (DEGREES F)

REGION	COLDEST VALUE	COLDEST YEAR	WARMEST VALUE	WARMEST YEAR	NORMAL TEMP	1998 TEMP
NORTHEAST	43.1	1904	49.3	1998	46.1	49.3
EAST NORTH CENTRAL	39.5	1917	48.0	1931	43.5	47.7
CENTRAL	50.6	1917	56.9	1921	53.2	56.3
SOUTHEAST	61.0	1901	65.0	1921	62.4	64.7
WEST NORTH CENTRAL	39.9	1916	46.7	1934	43.3	45.6
SOUTH	60.4	1979	64.9	1921	62.0	64.5
SOUTHWEST	49.5	1912	54.6	1934	51.8	52.8
NORTHWEST	44.1	1955	50.2	1934	46.7	48.6
WEST	53.0	1911	57.8	1934	55.0	54.6
NATIONAL	50.7	1917	54.7	1934	52.4	54.6*

* PRELIMINARY VALUE, CONFIDENCE INTERVAL + OR - .0 DEG. F.

TABLE 4.

STATISTICS FOR SELECTED RIVER BASINS: PRECIPITATION RANKING FOR OCT-DEC 1998, WHERE RANK OF 1 = DRIEST, 104 = WETTEST, BASED ON THE PERIOD 1895 TO 1998, AREAL PERCENT OF THE BASIN EXPERIENCING SEVERE OR EXTREME LONG-TERM (PALMER) DROUGHT, AND AREAL PERCENT OF THE BASIN EXPERIENCING SEVERE OR EXTREME LONG-TERM (PALMER) WET CONDITIONS, AS OF DECEMBER 1998. RIVER BASIN REGIONS AS DEFINED BY THE U.S. WATER RESOURCES COUNCIL.

RIVER BASIN	PRECIPITATION RANK	% AREA DRY	% AREA WET
MISSOURI BASIN	104	.0%	37.9%
PACIFIC NORTHWEST BASIN	83	.0%	14.8%
CALIFORNIA RIVER BASIN	45	.0%	100.0%
GREAT BASIN	43	.0%	80.3%
UPPER COLORADO BASIN	48	.0%	.0%
LOWER COLORADO BASIN	52	.0%	18.6%
RIO GRANDE BASIN	80	.0%	.0%
ARKANSAS-WHITE-RED BASIN	98	.0%	26.0%
TEXAS GULF COAST BASIN	92	19.4%	16.3%
SOURIS-RED-RAINY BASIN	102	.0%	23.1%
UPPER MISSISSIPPI BASIN	77	12.1%	6.8%
LOWER MISSISSIPPI BASIN	39	9.0%	.0%
GREAT LAKES BASIN	22	43.6%	.0%
OHIO RIVER BASIN	27	17.4%	.0%
TENNESSEE RIVER BASIN	42	.0%	.0%
NEW ENGLAND BASIN	14	.0%	7.7%
MID-ATLANTIC BASIN	5	48.1%	2.6%
SOUTH ATLANTIC-GULF BASIN	12	7.8%	.0%

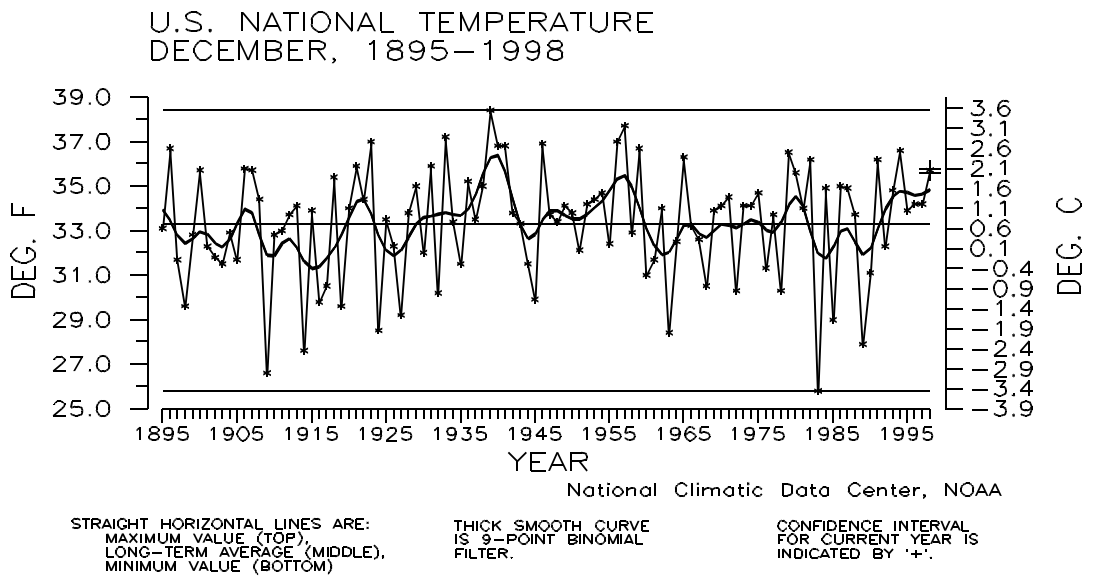

Figure 1: Preliminary data for December 1998 indicate that temperature averaged across the contiguous United States was above the long-term mean ranking as the 21st warmest December since 1895. Over ten percent of the country was much warmer than normal while less than two percent of the country was much cooler than normal.

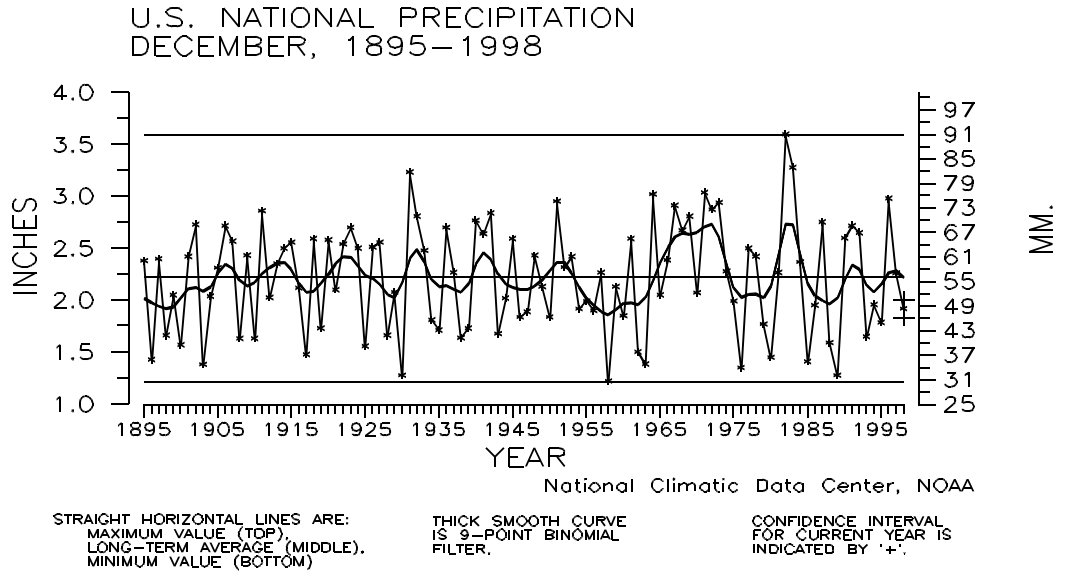

Figure 2: December 1998 was the 33rd driest such month since 1895. Over eleven percent of the country experienced much drier than normal conditions while about four percent of the country was much wetter than normal.

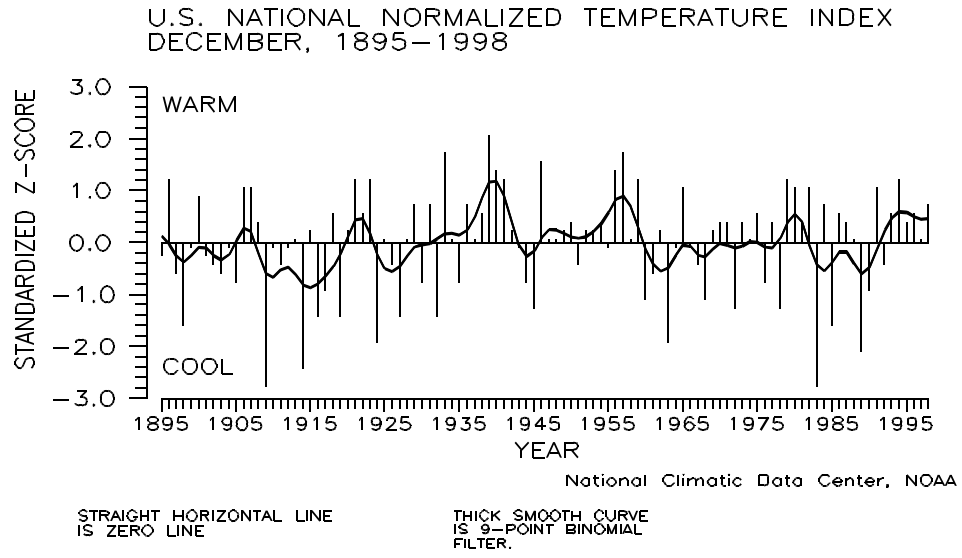

Figure 3: The preliminary national standardized temperature index ranked December 1998 as the 21st warmest such month on record.

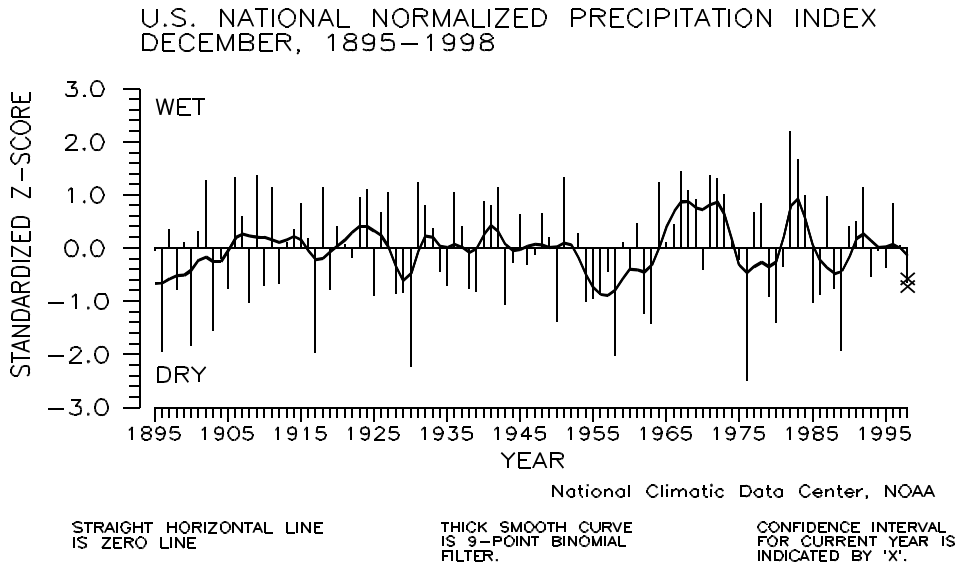

Figure 4: The preliminary national standardized precipitation index ranked December 1998 as the 33rd driest such month on record. This standardized z-score is estimated to be accurate to within 0.07 index units.

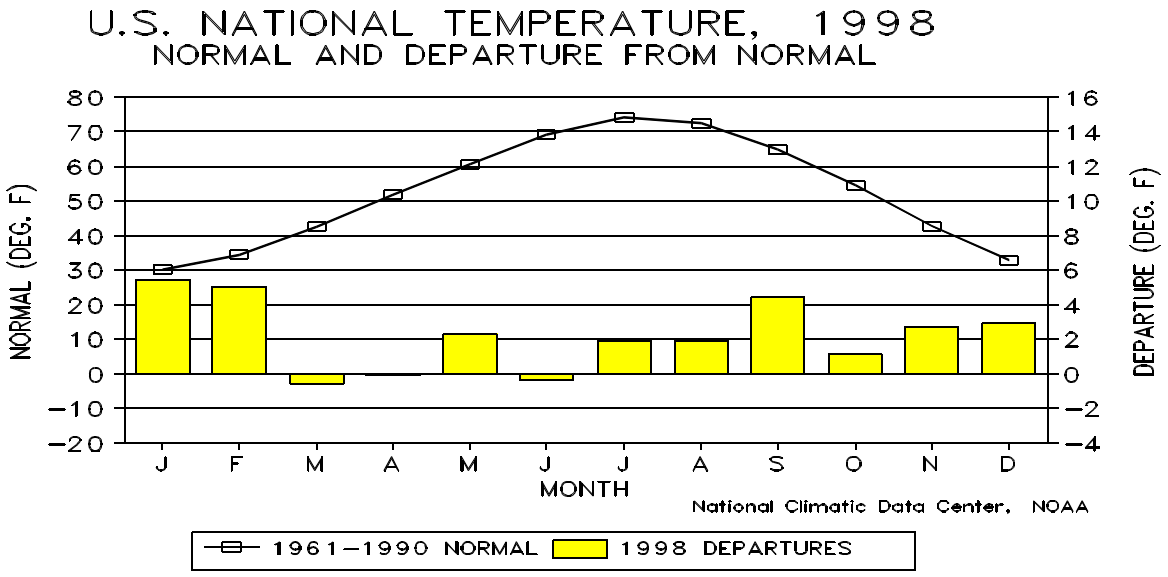

Figure 5: The average temperature during each month of 1998 was above the 1961-1990 normal except for March, April, and June. The departure from normal was as great as +5.4°F. during January.

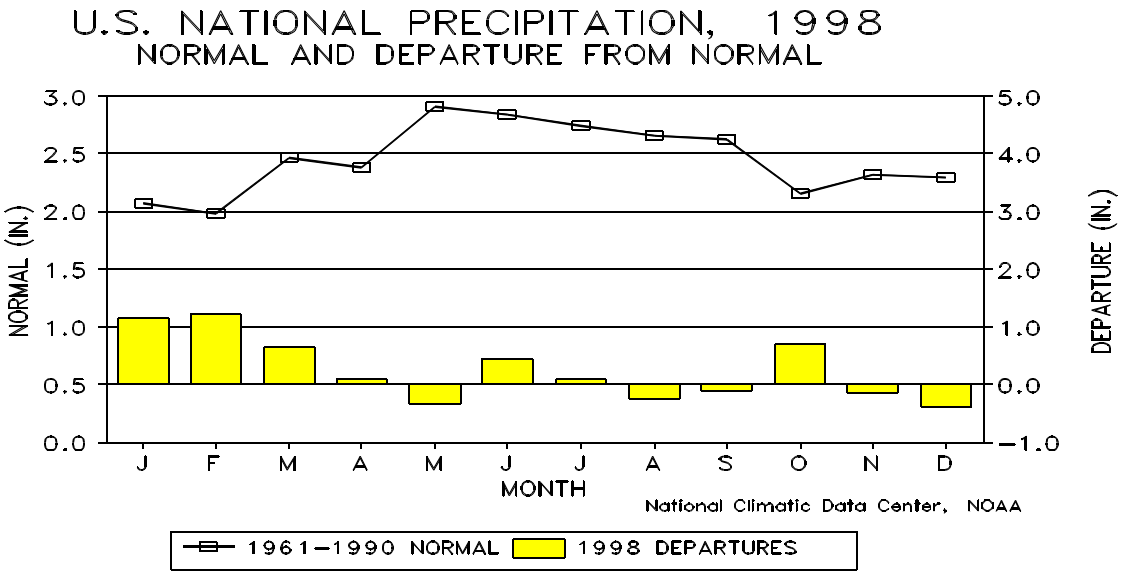

Figure 6: The first three months of 1998 were wetter than normal, accredited to the waning El Nino. Precipitation during the remaining months of 1998 fluctuated within one inch of normal.

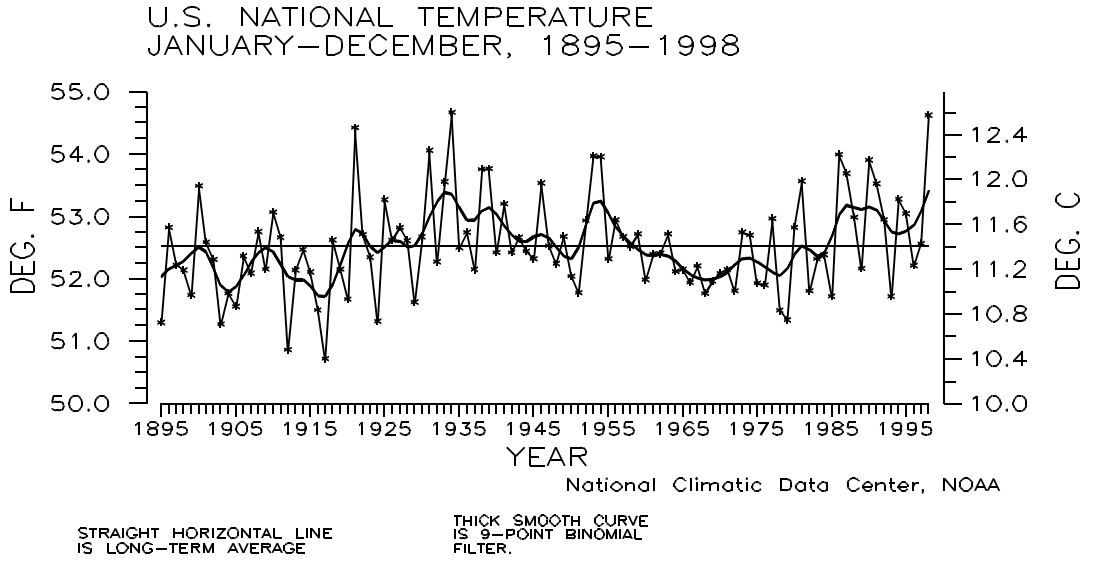

Figure 7: Preliminary temperature data indicate that January-December 1998, was the second warmest year since records began. About 75% of the country averaged much warmer than normal while nearly zero percent of the country averaged much cooler than normal. Nine of the last thirteen years have been above- to much-above the long-term mean.

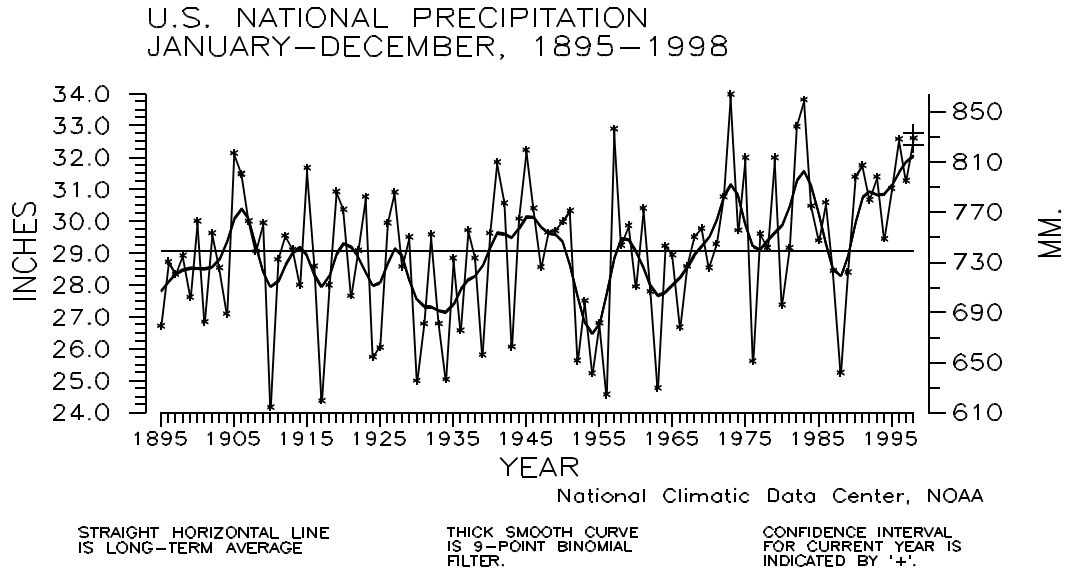

Figure 8: Preliminary precipitation data indicate that January-December 1998, was the fifth wettest such period since records began in 1895. About 22% of the country was much wetter than normal for this period while about two percent of the country was much drier than normal. Each of the last nine years have been above- to much above the long-term mean.

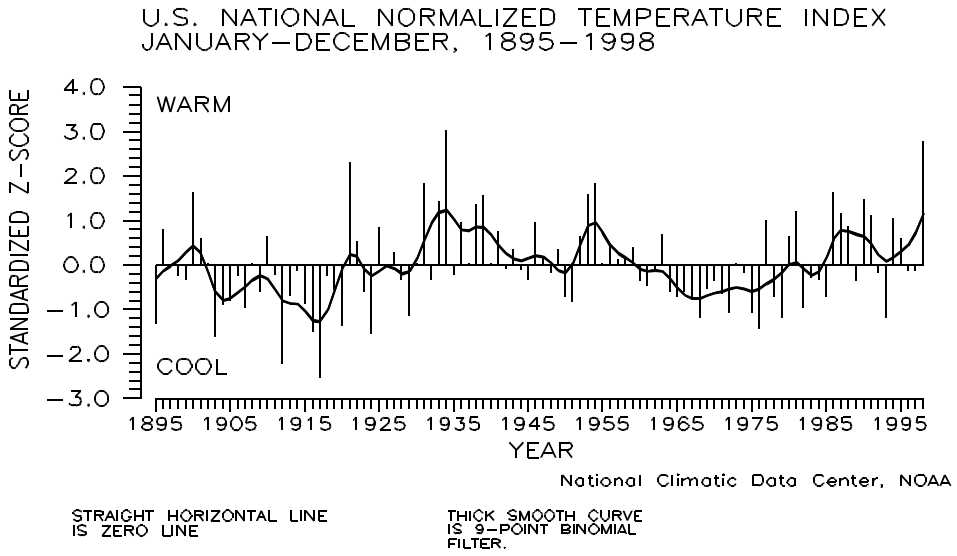

Figure 9: The preliminary national standardized temperature index ranked January-December 1998 as the second warmest year since records began in 1895.

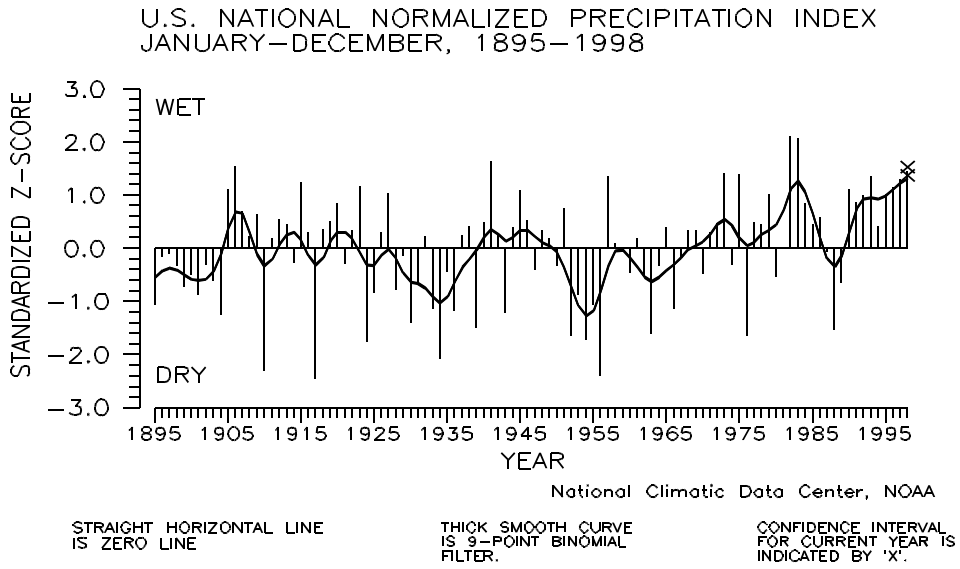

Figure 10: The preliminary national standardized precipitation index ranked January-December 1998 as the fifth wettest such period since 1895. This standardized z-score is estimated to be accurate to within 0.08 index units.

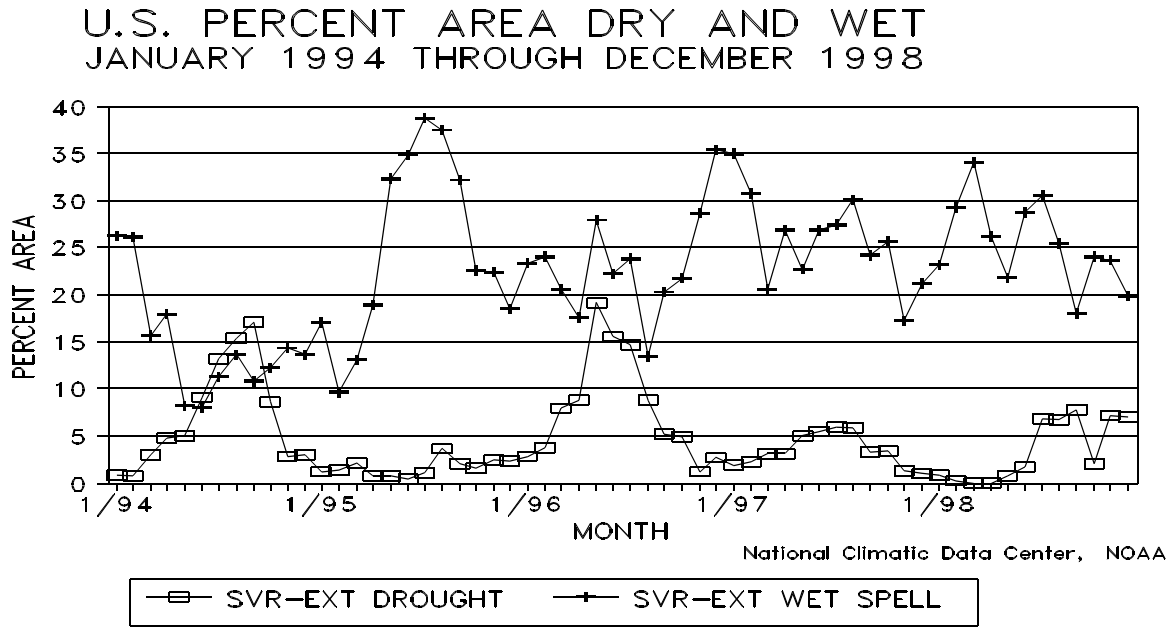

Figure 11: Long-term drought coverage (as measured by the Palmer Drought Index) showed little change from November to December, with December 1998 having about seven percent of the country in severe to extreme drought. The percent area of the country experiencing severe to extreme wetness dropped slightly to about 20%. Core dry areas included the mid-Atlantic region, north-central Texas, central Florida and northern Minnesota. The core wet areas included California, the Great Basin, the northern and central Plains, the central Rockies, and the central Mississippi valley.

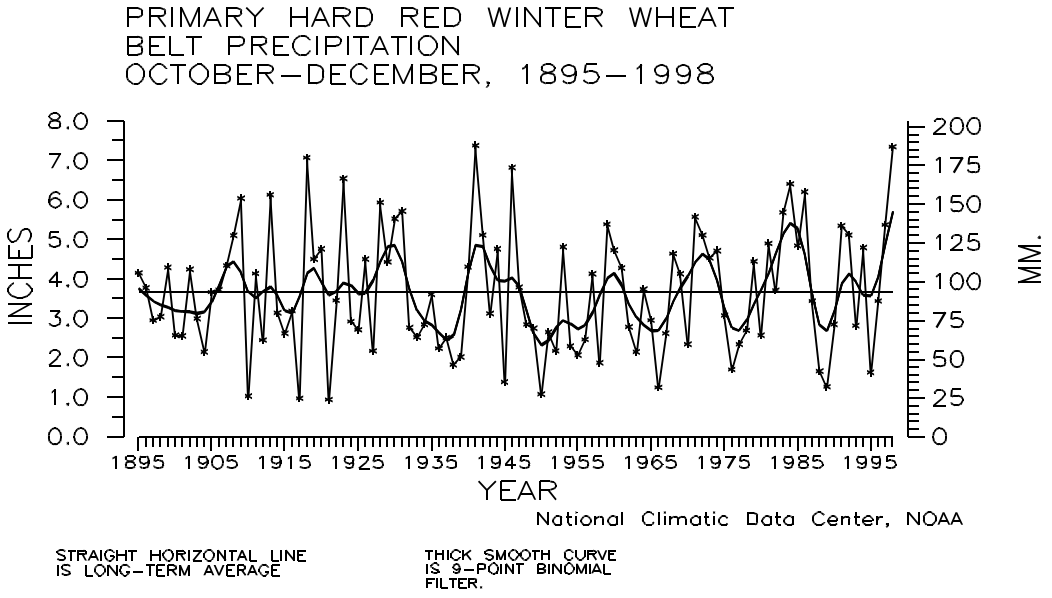

Figure 12: Preliminary data indicate that precipitation averaged across the Primary Hard Red Winter Wheat agricultural belt was much above the long-term mean and ranks as the second wettest such three month period since 1895.

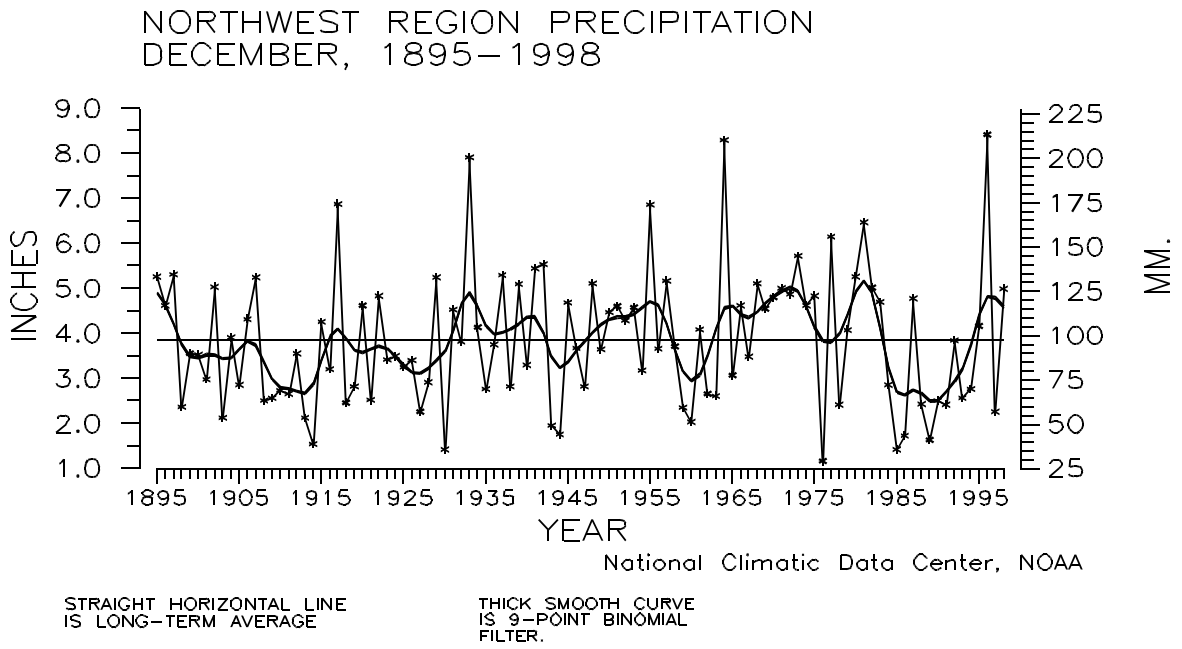

Figure 13: Preliminary data indicate that December 1998 was the 24th wettest such month on record for the Northwest region. The Northwest region includes Idaho, Oregon, and Washington.

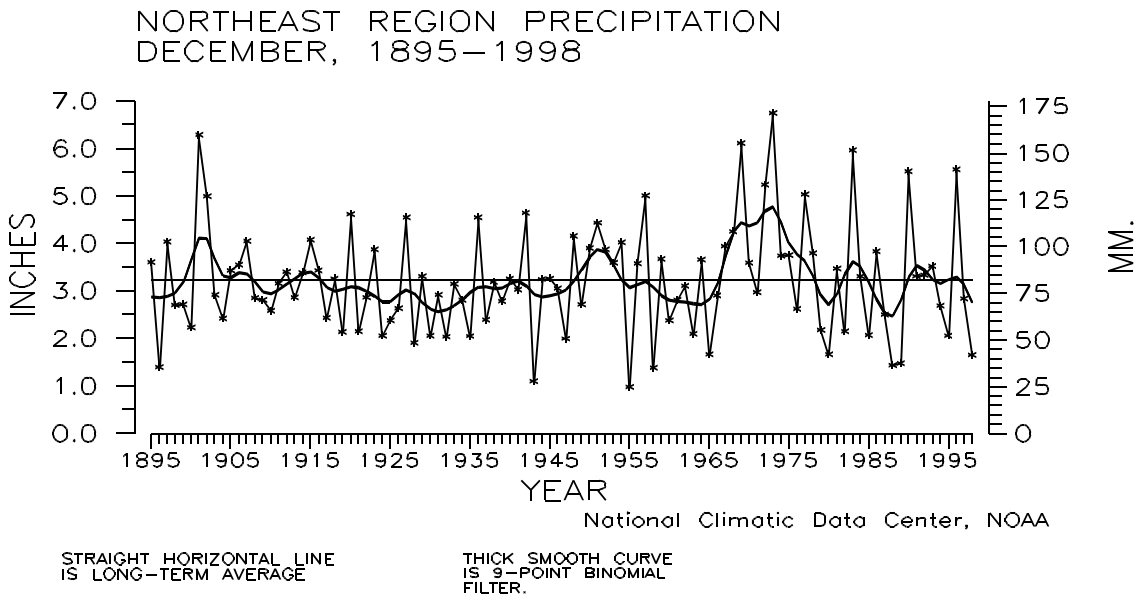

Figure 14: Preliminary data indicate that December 1998 was the seventh driest such month since 1895 for the Northeast region. The Northeast region includes each state from Maryland and Pennsylvania, northeastward.

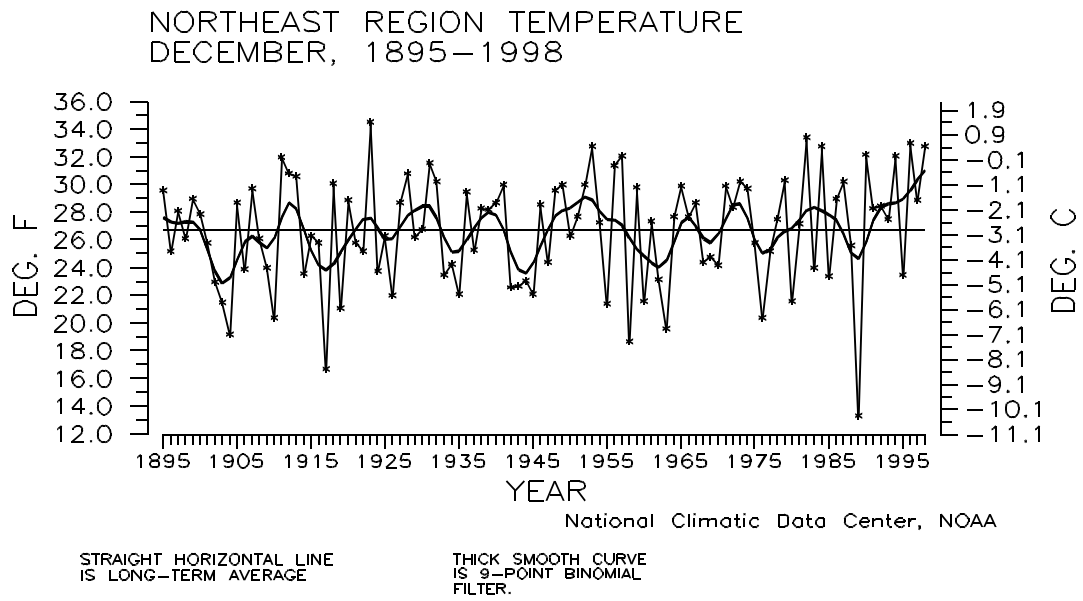

Figure 15: Preliminary data indicate that December 1998 was the sixth warmest such month since 1985 for the Northeast region.

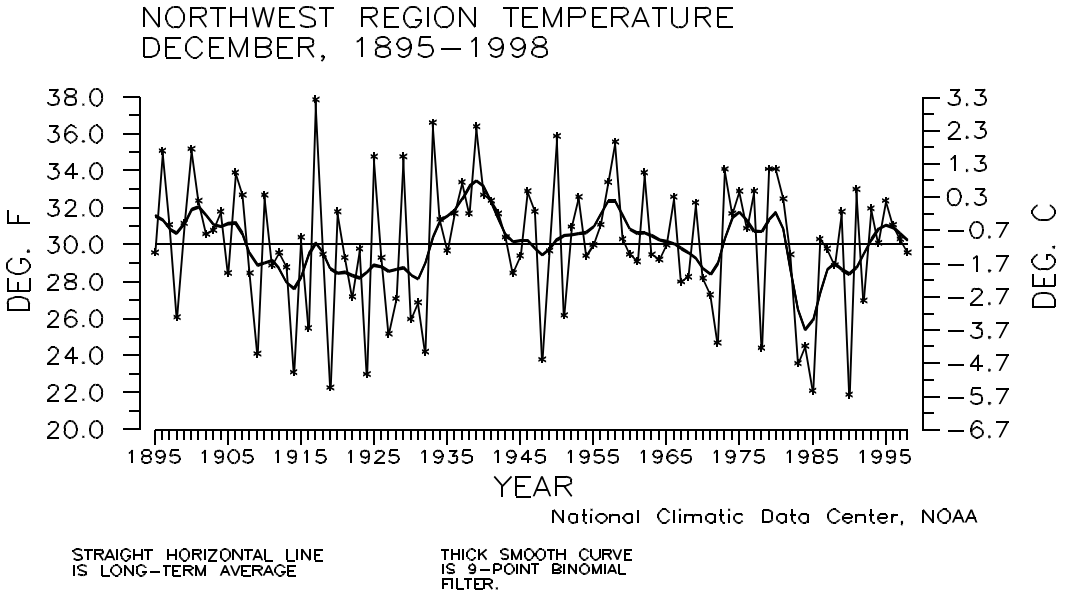

Figure 16: Preliminary data ranked December 1998 as the 42nd coolest such month on record for the Northwest Region.

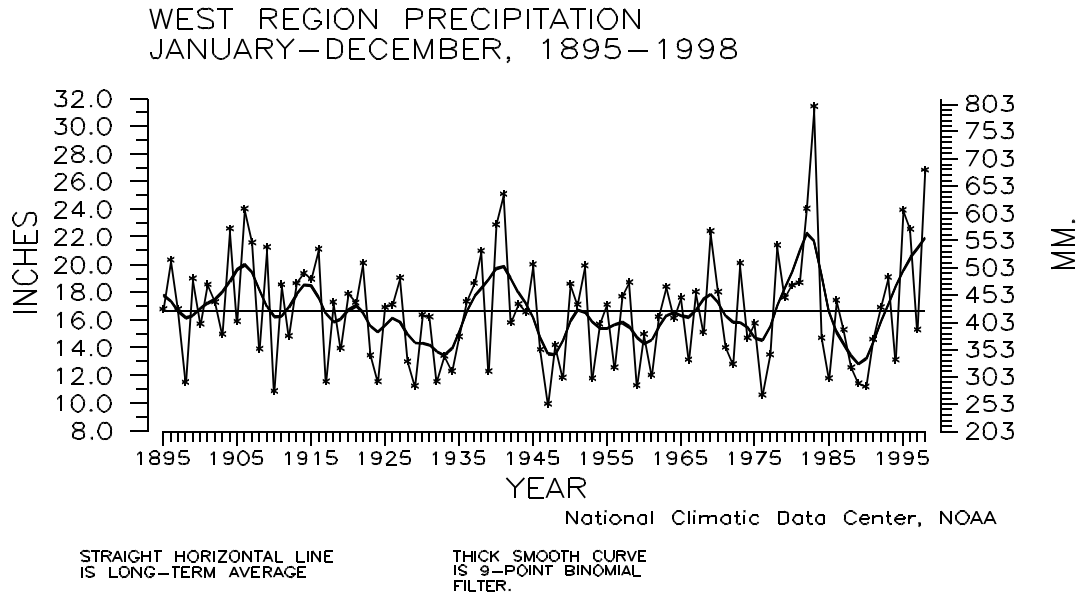

Figure 17: Preliminary data ranked January-December 1998 as the second wettest year on record for the West Region. The West Region includes California and Nevada.

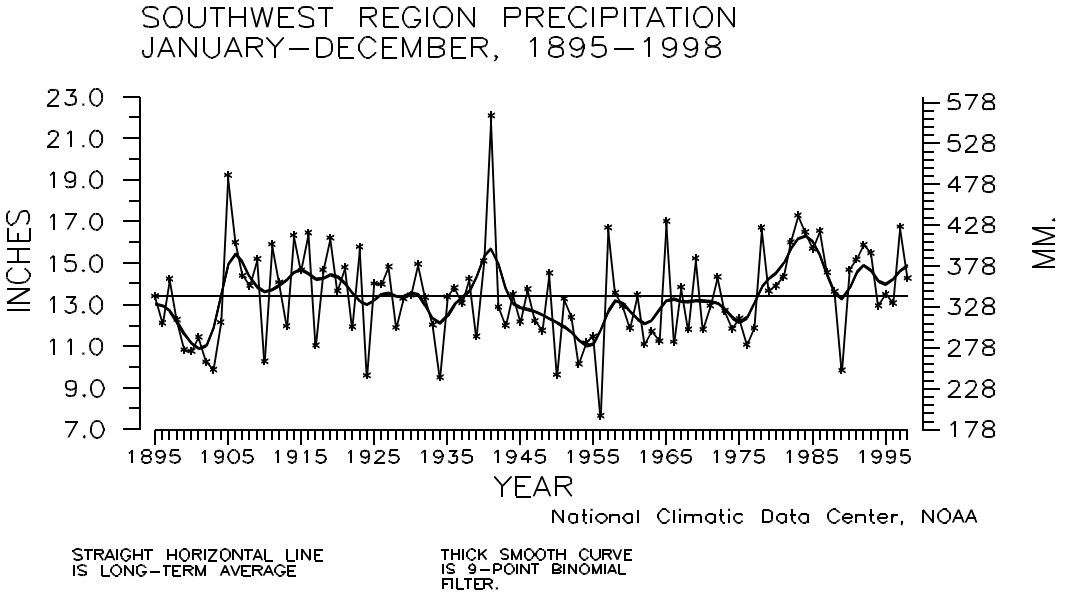

Figure 18: Preliminary data ranked January-December 1998 as the 35th wettest such month on record for the Southwest region. The Southwest region includes Arizona, Colorado, New Mexico, and Utah.

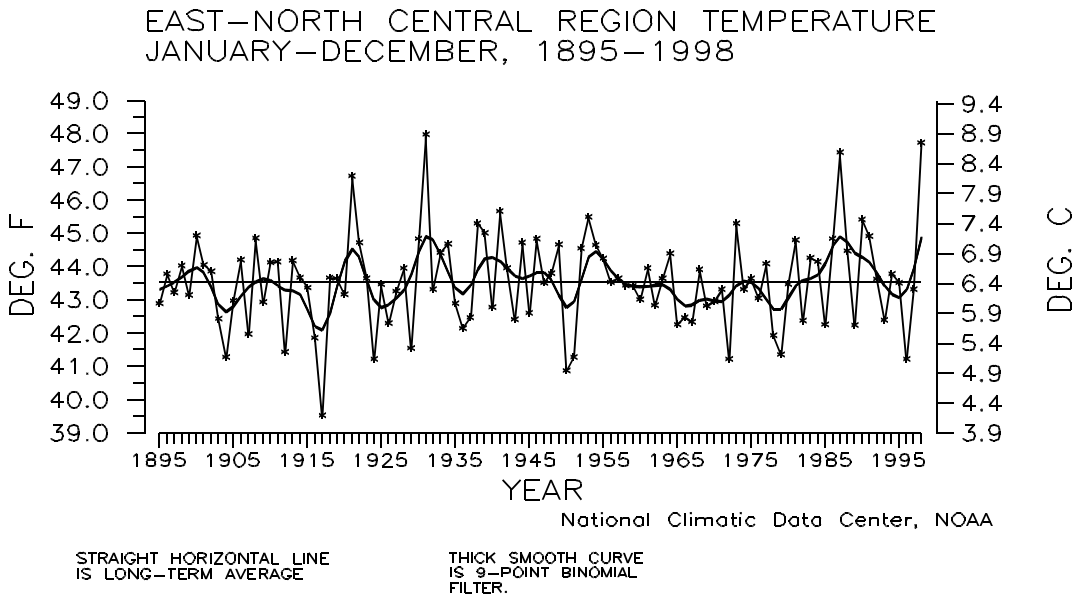

Figure 19: Preliminary data ranked January-December 1998 as the second warmest such period on record for the East-North Central region. The East-North Central region includes Iowa, Michigan, Minnesota, and Wisconsin.

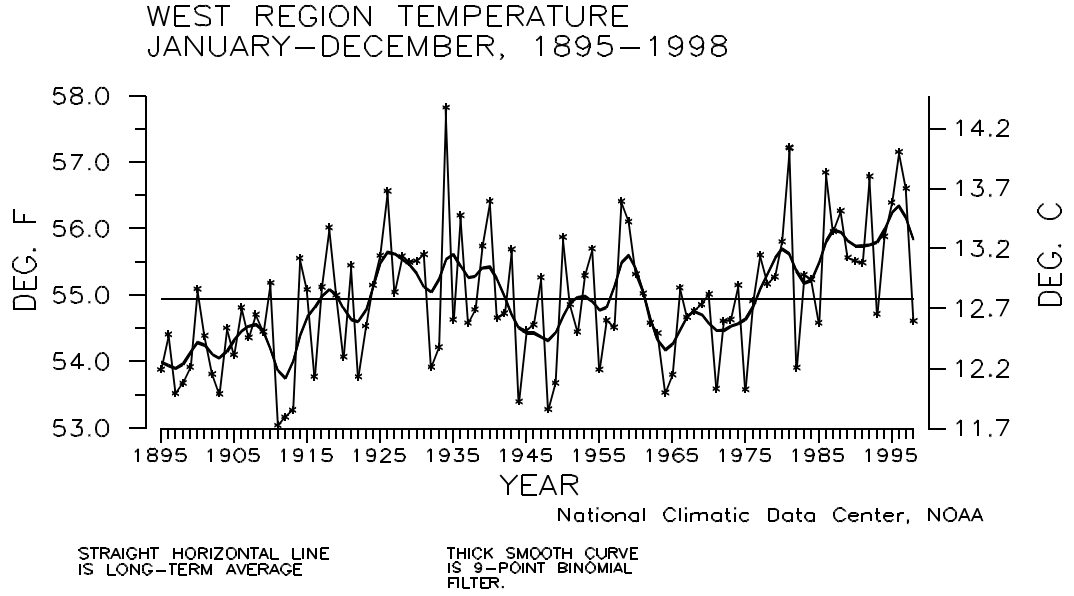

Figure 20: Preliminary data ranked January-December 1998 as the 40th coolest such year on record for the West Region. Only two of the last thirteen years have been below the long-term mean.

DECEMBER 1998 STATEWIDE RANKS

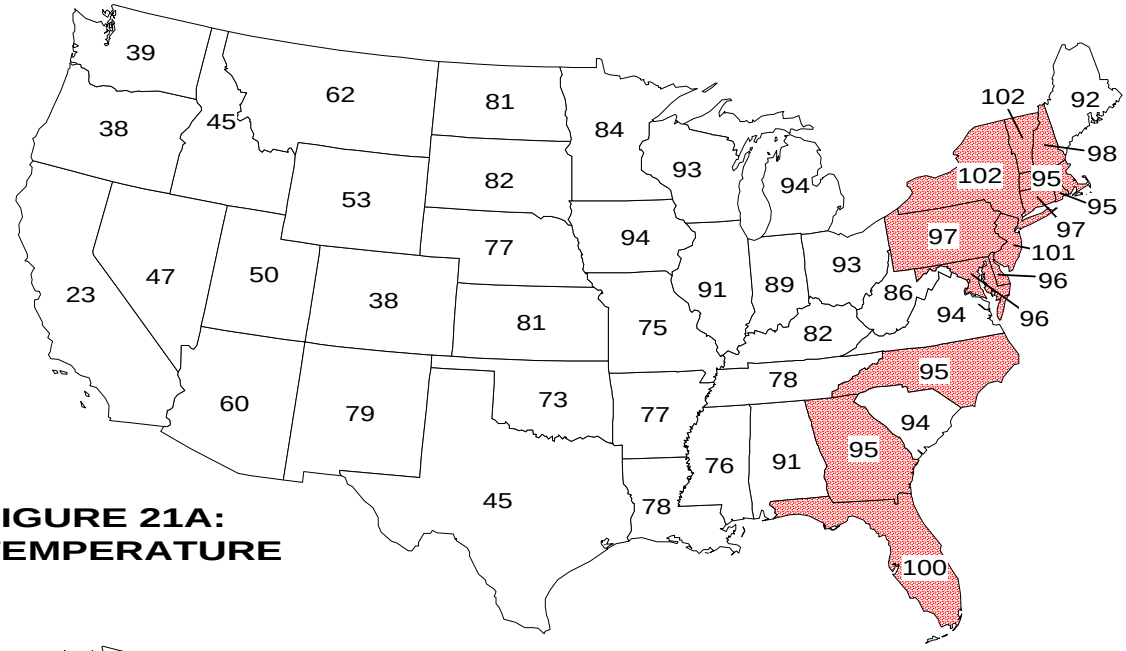

FIGURE 21A: TEMPERATURE

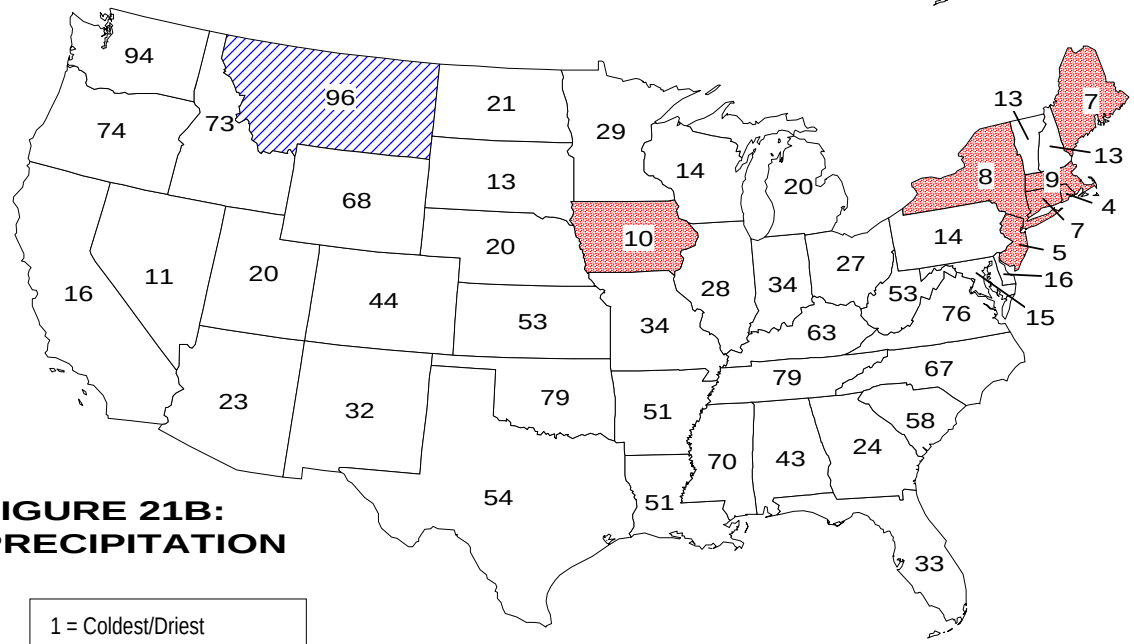

FIGURE 21B: PRECIPITATION

1 = Coldest/Driest
104 = Warmest/Wettest

National Climatic Data Center, NOAA

Temperature and Precipitation Ranks for the contiguous United States. Each state is ranked based on its data from 1895-1998. States having a rank of top ten coldest or driest (rank 1-10) or top ten warmest or wettest (rank 95-104) are shaded.

JAN-DEC 1998 STATEWIDE RANKS

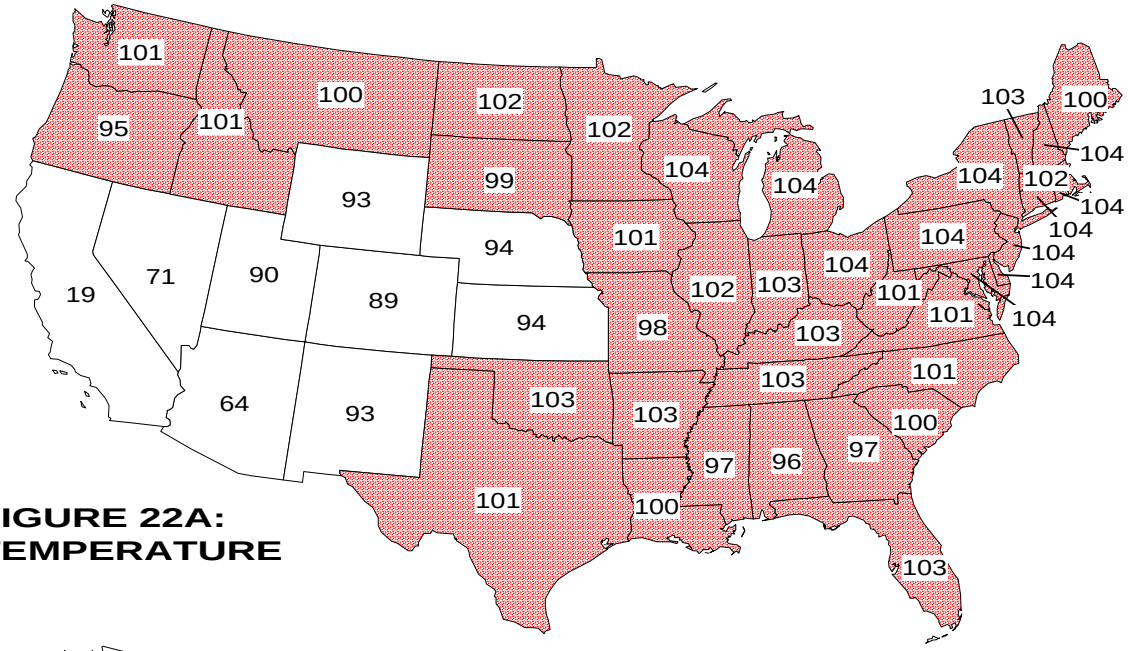

FIGURE 22A: TEMPERATURE

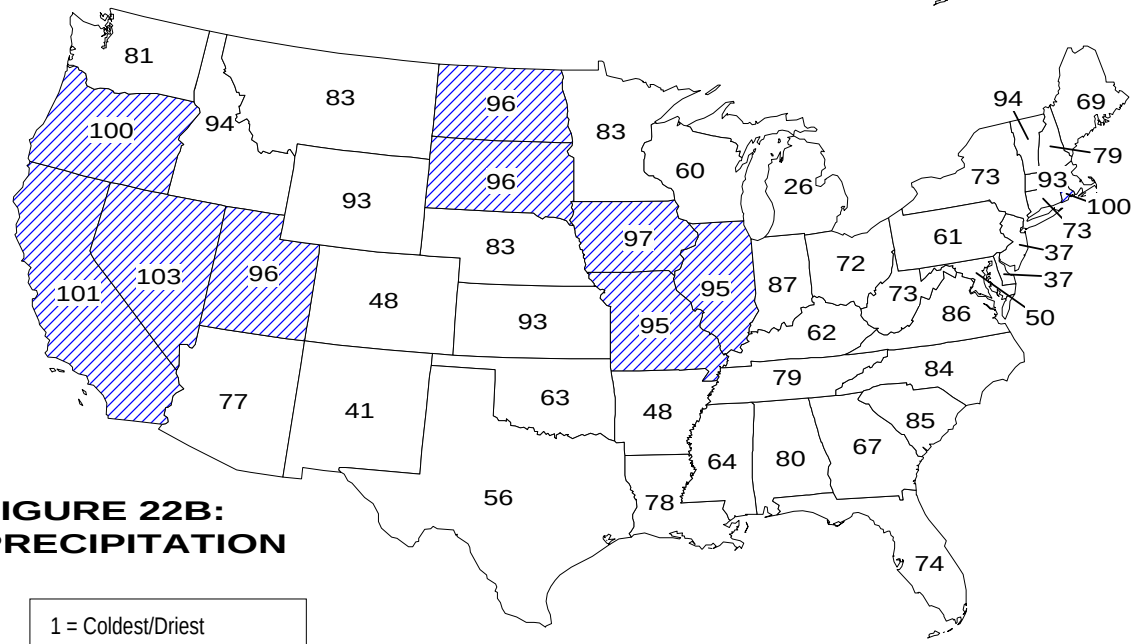

FIGURE 22B: PRECIPITATION

1 = Coldest/Driest
104 = Warmest/Wettest

National Climatic Data Center, NOAA

Temperature and Precipitation Ranks for the contiguous United States. Each state is ranked based on its data from 1895-1998. States having a rank of top ten coldest or driest (rank 1-10) or top ten warmest or wettest (rank 95-104) are shaded.

Figure 21A shows, in illustrative map form, the December 1998 temperature rankings for the 48 contiguous states. Thirteen states were within the top ten warm portion of the historical distribution and twenty-four others ranked within the warm third of the historical distribution. No state was within the top ten cool portion of the distribution and only one was within the cool third of the distribution.

December 1998 state ranks for precipitation are shown in **Figure 21B**. One state ranked within the top ten wet portion of the distribution while seven others ranked within the wet third portion of the distribution. Seven states also ranked within the top ten dry portion of the historical distribution while 22 others ranked within the dry third. ***It should be noted that these December state precipitation ranks are preliminary and should be used with considerable caution due to the high variability of precipitation on a small space and time scale.***

The annual 1998 statewide temperature and precipitation ranks are shown in **Figures 22A and 22B**. Thirty-nine states ranked within the top ten warm portion of the historical distribution including the warmest January-December period on record for Connecticut, Delaware, Maryland, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, and Wisconsin. Seven other states ranked within the warm third of the distribution. No state was within the top ten cool and only one (CA) ranked within the cool third of the distribution. Ten states had their tenth wettest or wetter January-December period including the second wettest such period on record for Nevada. Twenty-three others ranked within the wet third portion of the distribution. Only one state (MI) ranked within the dry-third portion of the distribution for the twelve-month period.

It should be emphasized that all of the temperature and precipitation ranks on these maps and in Table 1 are based on preliminary data. The ranks will change when the final data are processed.